

REMARKS

The application has been reviewed in light of the Office Action mailed on June 24, 2009. Claims 1-15 are pending in the present application, with claim 1 being in independent form. Claims 16-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. Claims 1, 6-8 and 12-13 have been amended in the present Amendment. It is respectfully submitted that the amendments are supported by the specification as originally filed and introduce no new subject matter, and the pending claims 1-15 are in condition for allowance.

Rejection of Claims under 35 U.S.C. § 102

Claims 1-15 are rejected under 35 U.S.C. § 102(e) as being anticipated by Wack et al., US Patent Number 6,818,459 (hereinafter “Wack”).

Applicants' invention is directed to a method for measuring a dimension on a substrate wherein a target pattern with a nominal characteristic dimension that repeats at a pitch of period P in a primary direction is provided. The target pattern has a pre-determined dimensional variation on the axis parallel to the primary direction that enables dimensional calibration. The target pattern is illuminated along the primary direction with radiation having at least one wavelength to produce diffracted radiation from the target pattern. The wavelength is chosen relative to the pitch P such that the zero-order of the diffracted radiation is spatially separated from none-zero orders of the diffracted radiation on the axis perpendicular to the primary direction. The zero-order and none-zero orders of the diffracted radiation are separately detected on the axis perpendicular to the primary direction. The response of the non-zero diffracted

orders to variation in the dimension relative to the nominal characteristic dimension is used to determine a dimension of interest along the primary direction.

In an effort to more clearly recite their invention, Applicants have amended independent claim 1 to include features “illuminating said target pattern along said primary direction with radiation characterized by at least one wavelength, so as to produce diffracted radiation from said target pattern, wherein said diffracted radiation has one zero order of said diffracted radiation and one or more none-zero orders of said diffracted radiation and said at least one wavelength is chosen relative to said primary pitch P such that said zero-order of said diffracted radiation is spatially separated from said one or more none-zero orders of said diffracted radiation along said substantially orthogonal direction to said primary direction” and “detecting said zero order of said diffracted radiation and said measurable quantity of said one or more none-zero orders of said diffracted radiation along said substantially orthogonal direction to said primary direction, wherein said zero order of said diffracted radiation is detected separately from said none-zero orders of said diffracted radiation”.

Wack discloses a method of determining multiple properties of a specimen by various combinations of known target and detection configurations incorporated in a single measurement device. It does not disclose spatial separation of zero order diffracted radiation from non-zero order diffracted radiation along an axis substantially orthogonal to the direction of the pitch. It does not disclose detection of zero order and non-zero order diffracted radiation separately along an axis substantially orthogonal to the direction of the pitch either. In addition, Wack does not disclose using the response of non-zero diffracted orders to variation in the dimension relative to a nominal characteristic dimension to determine a dimension of interest along the direction of the pitch.

Since the amended independent claim 1 contain at least one feature which is not disclosed by Wack, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 102(e) be withdrawn.

Claims 2-15 depend directly or indirectly from independent claim 1 and are therefore patentable for at least the reasons given above for independent claim 1. Accordingly, Applicants respectfully request that the rejection of claims 2-15 under 35 U.S.C. § 102(e) be withdrawn.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that all claims pending in this application, namely claims 1-15, are now in condition for allowance. Accordingly, early and favorable consideration of this application is respectfully requested. Should the Examiner believe that a telephone or personal interview may facilitate resolution of any remaining matter; the Examiner is respectfully requested to contact Applicants' undersigned representative at the telephone number indicated below.

No fee is believed to be due for this submission. If any fees are required, however, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 09-0458.

Respectfully Submitted,

Christopher Ausschnitt,

/Wenjie Li/

Wenjie Li, Ph.D.
Reg. No. 59, 265

International Business Machines Corporation

D/18G, B/321, Zip 482
2070 Route 52
Hopewell Junction, NY 12533

Phone: (845) 894-2580
Fax: (845) 892-6363